

What is claimed is;

1. Structure to shorten the total length of piston and liner by inhalation of the 2-4 times compressed air or the mixed fuel gas as the atmospheric pressure and heated, into the liner.
2. Structure to shorten radii of gyration of crankshafts, and to reduce weight of crankshaft.
3. Structure to lighten its own weight of engine by using shortening liners and shortening radii of gyration of crankshaft to shorten cylinder block.
4. Structure to reduce the engine weight and the maintenance cost by shortening of the radii of gyration of crankshafts, decreasing of the capacity of the oil pan, and the decreasing of the lubricating oil.
5. Structure to place the air tank which stores compressed and heated air or the mixed fuel gas temporarily and to make the gases inhale into cylinder liner.
6. Form of compressor for compressing the air or the mixed fuel gas to 2-4 times or more, structure of valve for controlling a constant temperature of the compressed air or mixed gas and provision into the tank for storing temporarily, and structure of the temperature regulator.
7. Structure to operate the temperature regulator according to claim 6, comprising:
 - infusing the natural gas or the hydrocarbon gas such as petroleum gas into the peroxidized exhaust gas with high temperature through the infusion tube and mixing evenly,
 - reacting the environmentally harmful peroxidized nitrogen gas and carbon sulfide particle with the carbon molecules and the hydrogen molecules, reducing and resolving into clean nitrogen gas, water vapor, and sulfur dioxide,
 - pressing the exhausted gas.
8. The technology that enables the improvement of degree of freedom of the valve operation at the same time as the simplification of the cylinder head by controlling the movement of the induction valve and the exhausted valve by driving oil-hydraulic pump, operating the valve by in-vehicle microcomputer at the starting, and not using valve operation by the camshaft.